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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,825	06/13/2005	Chun Ye	290.1159USN	5176

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EXAMINER

CHAPEL, DEREK S

ART UNIT PAPER NUMBER

2872

DATE MAILED: 10/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/538,825	YE, CHUN	
	<b>Examiner</b>	<b>Art Unit</b>	
	Derek S. Chapel	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20-66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,4 and 5 is/are allowed.
- 6) ☒ Claim(s) 59-61 is/are rejected.
- 7) ☒ Claim(s) 3, 6-18, 20-58 and 62-66 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status Of Claims***

1. This Office Action is in response to an amendment received 10/6/2006 in which Applicant lists claims 19 as being cancelled, claims 10-11, 13, 22, 24, 26-27, 29, 31-36, 38-40, 43, 45-51, 53-58 and 60-65 as being previously amended, and claims 1-9, 12, 14-18, 20-21, 23, 25, 28, 30, 37, 41-42, 44, 52, 59 and 66 as being currently amended. It is interpreted by the examiner that claims 1-18 and 20-66 are pending.

### ***Oath/Declaration***

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It was not executed in accordance with either 37 CFR 1.66 or 1.68. It is noted by the examiner that the inventor did not date the oath or declaration after signing it.

### ***Specification***

3. The amendments to the specification received 10/6/2006 are acknowledged and accepted. The previous objections to the specification in the office action mailed 7/7/2006 are hereby withdrawn.

4. The abstract of the disclosure is objected to because:

- a. "comprises" should be changed to --includes-- in the forth line of the specification;
- b. all instances of "said" should be changed to --the--;
- c. "means" should be removed from the abstract, see line 7 of the abstract;
- d. the abstract is too long.

Correction is required. See MPEP § 608.01(b).

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. The disclosure is objected to because of the following informalities: "comprising FIGS. 6a-6b" should be changed to --comprising FIGS. 6a-6c-- in the brief description of figure 6 on page 6 of the specification.

Appropriate correction is required.

***Claim Objections***

7. The amendments to the claims received 10/6/2006 are acknowledged and accepted. The previous objections to the claims in the office action mailed 7/7/2006 are hereby withdrawn.

8. Claims 3, 6-18 and 20-58 are objected to because of the following informalities: in numerous instances the minus signs in the claims appear to be underscores. For instance, Claim 6 says, "n<sub>1</sub> intermediate polarizers" which should read --n-1 intermediate polarizers--. Further, it appears that all of the Greek symbols are shifted down lower in the line which may be what is causing the minus signs to appear as underscores. The specification appears to be free of this problem. The examiner respectfully requests the applicant's help in fixing these errors (specifically see claims 3, 6, 22, 30-34, 37, 39-42, 44, 46-48 and 52-58).

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

9. The amendments to the claims received 10/6/2006 are acknowledged and accepted. The previous 112 rejections to the claims in the office action mailed 7/7/2006 are hereby withdrawn.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 59-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Terahara et al., U.S. Patent Publication 2001/0010593, of record (hereafter Terahara).
12. As to claim 59, Terahara teaches providing a spectral filter comprising an entrance polarizer (See Fig. 17, Element P1), at least a dispersive polarization rotator (See Fig. 17, Elements FR1 or FR2) and at least an orientation-sensitive polarizing element (See Fig. 17, Elements P1, P2 or BP); and tuning said spectral filter by rotating said polarizing element(s) or/and by varying the rotation angle(s) of said polarization rotator(s) (See Page 7, Paragraphs 0111-0114).
13. As to claim 60, Terahara teaches the combination of claim 59, wherein said filter is a single-stage spectral filter (See Fig. 17), comprising an entrance polarizer (See Fig. 17, Element P1), a rotatable exit polarizer (See Fig. 17, Element P2; It is noted that the examiner interprets the limitation “rotatable exit polarizer” to be met in that the exit polarizer rotates the polarization of the light passing through it and does not interpret “rotatable exit polarizer” to mean that the exit polarizer has to be physically rotatable about the optical axis.), and a dispersive polarization rotator (See Fig. 17, Element FR1), and said method comprises the step of tuning said single-stage filter by rotating said exit polarizer relative to said entrance polarizer or/and by varying the rotation angle of said dispersive polarization rotator (See Page 7, Paragraphs 0111-0114).
14. As to claim 61, Terahara teaches the combination of claim 60, wherein said single-stage filter is modified to further comprise a rotatable half-wave retarder or an

active polarization rotator (See Fig. 17, Element FR2), and said method further comprises the step of tuning said filter by rotating said retarder or varying the rotation angle of said active polarization rotator (See Page 7, Paragraphs 0111-0114).

***Allowable Subject Matter***

15. Claims 3, 6-18 and 20-58 would be allowable if amended to overcome the objections cited in section 8 of this office action.

16. Claims 1-2 and 4-5 are allowed.

17. The following is an examiner's statement of reasons for allowance:

18. Claim 1 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a single-stage filter that is further tunable by rotating said exit polarizer about said beam axis relative to said entrance polarizer, and functions as a one-direction device that transmits and tunably filters light in one direction, but blocks the backward light, with said exit polarizer fixed and oriented at 45° relative to said entrance polarizer, as generally set forth in claim 1. Claims 2-5 are dependent on claim 1 and therefore contain allowable subject matter for at least the same reason as claim 1.

19. Claim 6 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a spectral filter having  $n$  dispersive polarization rotators which have their wavelength-dependent rotation angles in the ratios of integers  $1:2:4:8:\dots:2^{n-1}$  disregarding the rotation sense over said wavelength range and are selected from optical rotators and Faraday rotators, the

spectral filter further including a rotatable exit polarizer, as generally set forth in claim 6. Claims 7-18 and 20-58 are dependent on claim 6 and therefore contain allowable subject matter for at least the same reason as claim 6.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

20. Claims 62-66 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

21. The following is a statement of reasons for the indication of allowable subject matter:

22. Claim 62 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a method of making a single-stage filter comprising a second dispersive polarization rotator and a variable retarder having its retardation switchable between two alternative states; and said method further comprises the step of tuning the filter by switching the retarder in the switched states, as generally set forth in claim 62, the device including, in combination with the features recited in claims 59 and 60.

23. Claim 63 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a method of making an n-stage spectral filter said method comprising the step of tuning said n-stage filter by



simultaneously rotating the n rotatable polarizers with the ratios of their azimuths remaining unchanged or so that the n rotatable polarizers are parallel or perpendicular to the entrance polarizer and further by simultaneously varying the rotation angles of the n polarization rotators with the ratios of their rotation angles remaining unchanged, as generally set forth in claim 63, the device including, in combination with the features recited in claim 59. Claims 64 and 65 are dependent on claim 63 and therefore contain allowable subject matter for at least the same reason as claim 63.

24. Claim 66 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a method of making a filter wherein said method comprises tuning said filter by simultaneously rotating said retarders or said retarders and exit polarizer with the ratios of their orientation angles remaining unchanged or/and by simultaneously varying the rotation angles of said polarization rotators with the ratios of said rotation angles remaining unchanged over said wavelength range or/and adjusting the transmission profile of said filter by varying the retardation of said retarders in a predetermined range, as generally set forth in claim 66, the device including, in combination with the features recited in claim 59.

### ***Response to Arguments***

25. It is noted the examiner that the allowable subject matter from claim 11 was included in amended claim 1 and the allowable subject matter from claim 19 was included in amended claim 6. However, the applicant stated that claims 59-61 were submitted to be allowable because they depend upon the allowable base claim and

because they include limitations that are not taught or suggested in the cited references. The examiner disagrees. Claim 59 is independent and although claim 59 was amended, claim 59 was not amended to include allowable subject matter. Therefore claims 59-61 stand rejected in view of Terahara et al, U.S. Patent Publication Number 2001/0010593, of record.

### ***Conclusion***


26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek S. Chapel whose telephone number is 571-272-8042. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
DSC  
10/16/2006

  
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